

1. A constant magnification imaging method comprising the steps of:
  - sampling reflected light amplitude of a signal source at a relatively high resolution while sampling surface area of the signal source at a relatively low characteristic spatial/temporal frequency (scan resolution) to produce input data; and
  - applying a pre-selected rescaling algorithm and a pre-selected amplitude quantizing algorithm to the input data in real-time to create target scan resolution, relatively low resolution amplitude output data of constant magnification.
2. The constant magnification imaging method as in claim 1 further comprising the steps of:
  - establishing the pre-selected rescaling algorithm; and
  - establishing the pre-selected amplitude quantizing algorithm.
3. The constant magnification imaging method as in claim 2 wherein said step of establishing the rescaling algorithm and the amplitude quantizing algorithm comprises the steps of:
  - determining a signature from the signal source;
  - performing an analysis of the signature;
  - selecting optimal algorithms for the signature based upon the analysis; and
  - utilizing the optimal algorithms for processing the input data.
4. The constant magnification imaging method as in claim 3 further comprising the step of:
  - linking the optimal algorithms with the signature.
5. The constant magnification imaging method as in claim 4 further comprising the step of:
  - storing the linked signature in a database.
6. The constant magnification imaging method as in claim 1 further comprising the step of:
  - configuring a device to execute the preselected rescaling algorithm and the preselected amplitude quantizing algorithm; and
  - enabling the device to perform said step of applying the preselected rescaling algorithm and the preselected amplitude quantizing algorithm to the relatively low characteristic scan resolution, relatively high resolution amplitude input data.

7. The constant magnification imaging method as in claim 6 further comprising the step of configuring a programmable frame grabber to execute the preselected rescaling algorithm and the preselected amplitude quantizing algorithm.
8. A constant magnification imaging method as in claim 1 further comprising the step of sampling by using at least one line scan camera.
9. A node in a computer network for carrying out the method according to claim 1.
10. A communications network comprising at least one node for carrying out the method according to claim 1.
11. A computer data signal embodied in electromagnetic signals traveling over a computer network carrying information capable of causing a computer system in the network to practice the method of claim 1.
12. A computer readable medium having instructions embodied therein for the practice of the method of claim 1.
13. A constant magnification imaging system comprising:
  - a data collection subsystem for sampling an amplitude of a signal source at a relatively high resolution and for sampling said signal source at a relatively low characteristic scan resolution, said data collection subsystem providing relatively low characteristic scan resolution, relatively high resolution amplitude input data; and
  - a data processing subsystem operably connected to said data collection subsystem, said data processing subsystem capable of real time conversion of said relatively low characteristic scan resolution, relatively high resolution amplitude input data to target scan resolution, relatively low resolution amplitude output data of constant magnification.

14. The constant magnification imaging system of claim 13 further comprising an algorithm selection subsystem, said algorithm selection subsystem operably connected to said data processing subsystem, said algorithm selection subsystem capable of establishing at least one algorithm in said data processing subsystem, said data processing subsystem capable of executing said at least one algorithm with respect to said relatively low characteristic scan resolution, relatively high resolution amplitude input data.

15. The constant magnification imaging system of claim 14 wherein said at least one algorithm is selected from the group consisting of rescaling algorithms and amplitude quantizing algorithms.

16. The constant magnification imaging system of claim 15 wherein said rescaling at least one algorithm is capable of converting said relatively low characteristic scan resolution, relatively high resolution amplitude input data to target scan resolution, relatively high resolution amplitude constant magnification intermediate data.

17. The constant magnification imaging system of claim 16 wherein said amplitude quantizing algorithm is capable of converting said constant magnification intermediate data to target scan resolution, relatively low resolution amplitude output data.

18. The constant magnification imaging system of claim 13 wherein said data collection subsystem comprises a data collection device.

19. The constant magnification imaging system of claim 13 wherein said data processing subsystem executes a computer code, said computer code forming a data buffer having said relatively low characteristic scan resolution, relatively high resolution amplitude input data, said data buffer having a plurality of lines, said data buffer having an oldest line of data and a newest line of data, said computer code executing said at least one algorithm against said data buffer creating a single line of processed data, said single line of processed data capable of being transmitted to a computer memory, said oldest line of data being deleted after said single line is transmitted, receiving said newest line of relatively low characteristic scan resolution, relatively high resolution amplitude input data as they are sampled after said single line is transmitted.

20. The constant magnification imaging system of claim 13 wherein said data processing subsystem comprises a programmable frame grabber, said programmable frame grabber executing a computer code, said computer code forming a data buffer having said relatively low characteristic scan resolution, relatively high resolution amplitude input data, said data buffer having a plurality of lines, said data buffer having an oldest line of data and a newest line of data, said computer code capable of executing said at least one algorithm against said data buffer creating a single line of processed data, said single line being capable of transmitted to computer memory, said oldest line of data capable of being deleted after said single line is transmitted, receiving said newest line of relatively low characteristic scan resolution, relatively high resolution amplitude input data as they are sampled after said single line is transmitted.

21. The constant magnification imaging system of claim 13 wherein said data collection device comprises at least one line scan camera, said data processing subsystem comprises a programmable frame grabber, said programmable frame grabber executing a computer code, said computer code forming a data buffer having said relatively low characteristic scan resolution, relatively high resolution amplitude input data, said data buffer having a plurality of lines, said data buffer having an oldest line of data and a newest line of data, said computer code capable of executing said at least one algorithm against said data buffer creating a single line of processed data, said single line capable of being transmitted to computer memory, said oldest line of data capable of being deleted after said single line is transmitted, receiving said newest line of relatively low characteristic scan resolution, relatively high resolution amplitude input data as they are sampled after said single line is transmitted.

22. A constant magnification imaging method comprising the steps of:

sampling reflected light amplitude of a signal source at a pre-selected first resolution while sampling surface area of the signal source at a pre-selected characteristic scan resolution to produce input data; and

creating output data of constant magnification by applying a pre-selected rescaling algorithm and a pre-selected amplitude quantizing algorithm to the input data in real-time, the output data having a target scan resolution,

wherein the reflected light amplitude of the output data has a pre-selected second resolution, the pre-selected second resolution being lower than the pre-selected first resolution.

23. The constant magnification imaging method as in claim 22 further comprising the steps of:  
establishing the pre-selected rescaling algorithm; and  
establishing the pre-selected amplitude quantizing algorithm.